

SEQUENCE LISTING

<110> Johal, Gurmukh S
Gray, John

<120> METHODS AND COMPOSITIONS FOR CONTROLLING CELL DEATH AND
DISEASE RESISTANCE IN PLANTS

<130> 035718/174733

<140>

<141>

<150> 08/810,009

<151> 1997-03-04

<160> 8

<170> PatentIn Ver. 2.0

<210> 1

<211> 2822

<212> DNA

<213> Zea mays

<400> 1

```
gcaacgcaca cagacaggca gcgatgtctt tcgcgggtca gtaaacctca ctcacacagg 60
ctattcgtct taagtttttt tgttcaacat cacatacttg tgttgctaata gtaacaaaaa 120
aaattcacac gcctcacaaa cattacaata tgattcaaaa tagacactaa ccaaaccttg 180
gaggactttg tactggctag agaacaccta ctctactgct atgctgctta cccgagacag 240
aggaaatata cacgagcaac tgttggtggac ttgttgcaaa atagcaagga aaggtattag 300
taatagcaag cataattgta ggagctgcaa gtataacaat gatagtctgc tcttttagtac 360
cttacatgta tgaaataaaa aactatatag gtaaagtga caacatgcgt tatgtaaatc 420
tagcagacta ttggattgaa aagaattcaa ttacaaggac aaagaatgac tgacgagggc 480
agcaacacaa taactaaatg ttccaaaatg gtcagatatg aagggtctga acgcatgcac 540
ggcatgatat gctagtgtgg gccgtttccg tcgggcttta aagataagga aatctggata 600
tggaactaat atgtctaatt ttgttttagag cctagcgccc tagcatgcta actagaaggt 660
taattttgtt tctatttttt gttgcaccga ctgagccaac attcttttgt ctagtagttt 720
acatttttagt tactactctc ttcgtctaaa aagtactata tctccatttt ttaaaatgtc 780
ttgctttttg aagagcacta tcttttaaaa tcttgaccaa ctatataaaa gtacttctga 840
tacatgatag gtttaataaa atatataaaa tcttatatatt ttagtaagtc tagtcaaact 900
taagagcttt tgatgtcgca catagtgtgt ttaaacaagg tgtttgttca tgttcgttct 960
aatatgtgga tagtattccg attcatttcg ccagaggtgt ggctgtggat atttggttag 1020
agcatcttca agaaaaccg taaatcaact ccaaaaacgt tttgagcctc ccaacagtcc 1080
cccttccctt ccccatatta cgcgtcaagc attgttccca atcgtcctct gcgcatgctg 1140
gttccacagt gtattttcct cgcgcgcagt tctgttgag gaggaaggcg ggacgttggc 1200
actagcgctg gctggagatt atggccatcg caatcagttt gtggcagtca aatgctttgt 1260
ttttttggcc gctcatgtga gtatcatttc tgtgaaaact atctaaatca atatgaatgt 1320
```

```

atatttcttt aagtcgtcac gataggaaga ctccatcggt ctaaaaccta aaccatgcac 1380
acatattcat ctttctccaa acgcaagtct cgtgatattt atattctcgt gccagctaga 1440
ttatctagaa atttagattc ttaaaaaaat tcttttagaaa aaaaattata ccaaacagga 1500
ccatgggttta aactattacg gataaatagc atgactacct tagtatttaa atgatatcag 1560
ttgaaatatg tcgacttatt ttatagttag tattattaga acatgtttta ataattatca 1620
catttaaacc agatctacat ataaactatt ttgcttgta actgcacgc aaactcactt 1680
gcctaccatc gggatcgcg cgtatataca gtgacacact ttaaatgatt taagccgcga 1740
aaattataaa tgtaccatcc tcatttggca agtctaaaga tagctttacc atacaaatga 1800
aactaaattt aaaattccaa gtaataatta gaaaaactga tttgacagtt ttttcagtat 1860
atatttagca gctcgctaaa tctgaattta gaaagttttt ttgaaatgag ttgagatgct 1920
cttataatgg ttactatagg ttgagggacg gaagtagtag tagaactggt aaacaaattc 1980
gaatttgatc tattcaactt tgtagctact cagcaagatg cgaattgcaa acatccggcg 2040
gggtggattc cgccacggcc cacgggtggg ttcgtgctgt tctcaccgcc ggtcaatctc 2100
ccctccgcgc ggcgcaattc gtcccgggtg ggacggctag ctggcccaat gccaaagctc 2160
caccgacaaa tgccgcaaag cgccatgcgt ggtcgctac aattgcctcc ttccccgcc 2220
ttcctccctt ccctgccgtg acgcaaccac actgcgtca ccacgtgta caatgtattc 2280
tcctagccg aaccgtatca gtagttctta ggggtggcg ttcgggttac ccgaaatttt 2340
cgggttgggt aattcaagtt ttttaaattt cgggttttga gaatcaatac ccgaaattac 2400
aacggatttt tcaatacccg gaatttcggg taccgggaat ttcgggttcg ggttcgggta 2460
ttcccaaact acccgaaacta ttgtgttggc ttcataaaaa cacatacacc ctattaaatt 2520
agtataaaaa tatagtttga ataataatat acatggacat ataaaacaca aacaatctac 2580
aatcccaagt tatgcacact tacacataat tatagatgta caaacttaa ttattaaagc 2640
atgacatgag tacatgacac atgaaagccg ggtaattcgg gtatttcggg taccgattg 2700
tgataccga attaccgaa ataatttcgg gttttgcaag ttgctacccg aaattcccaa 2760
acaaaattcg ggtttcgggt atttcgggtt cgggttcggg tattccaggt ttgggtttcg 2820
gg
2822

```

<210> 2
 <211> 4015
 <212> DNA
 <213> Zea mays

```

<400> 2
ttacgggttt tttgcccagc cctactagtt cttccctcgc gttcactccc cagcgtggga 60
aaatcccgga attttcttgt ttgtccactg gttttcttgc gccaaaacca ggtttctccc 120
cgttgccgtg gcagaactct gttcttgccc agtctagaag atctgcaccg ttccaaccac 180
cgactccggc cgccaagcat atagccagcg cggcgaagaa ttcccaacgc gaaagccaaa 240
acctcttcac ttcacttcac gtcgacacgt gcggggagaa tatgcgcgcg acaatcccag 300
ccctgtcgt cctgggtgac ccgcggctcc cctcgtcgc cgtgcgctg gctggaggcc 360
gcctccgcga gggcggtcgt tctcggacce gcctccgcgt ggcggcgccg acgtccgtac 420
caggggaagc ggcggagcag gcggagccga gcacgtcggc gcccagatcc ggcgagaagt 480
tctcgtggag ggatcactgg tacccggtct ccctcgtcga ggacctcgac ccagccgcc 540
ccaccccggt ccagctcctc aaccgcgacc tcgtcatctg gaaggaaacc aagtcggcg 600
agtgggtcgc gctcgacgac cgctgcccc accgccttgc ccgctctcg gtacggcgac 660
ccgcatccct tctcgcctc atcgtgtcc taccggtat cttcctcgtt tcggctaatt 720
ttggtctgg catgtgcagg agggcaggat cgatgagacg ggggtgcttg agtgctcgt 780
tcacggatgg tcattcgatg gctccggcgc ctgcaccaag atccccagg ccattgccga 840
gggtcctgag gcccgwgcgg tgcggtcacc gaaggcgtgc gcgatcaagt tccccacct 900

```

cgtctcccag gggctgctct tcgtgtggcc cgatgagaat ggggtgggaga aagcggccgc 960
 caccaagcct ccaatgtgcg tagagtcaga ctttggactg cggctaattg gttggattca 1020
 gttttgcatt tcggtgtctg aattcgatct tatttggttt caggttgccg aaagaatttg 1080
 aggacccggc cttctccacg gtgacaatcc agagggactt gttctatggt tatgatacgt 1140
 tgatggagaa cgtctctgat ccgtcccata tagaatttgc tcaccacaag gtacttggtta 1200
 cagtggagaaa gcttagttgc ttgccacact taagcaccat gatagtattt ttcagttgaa 1260
 agttgggtgat tcgaggaaag atgttttggt gcaaccaatt tgtgtagttt gctaaaaaat 1320
 cacctcctca atactgttta attgtgtagg cctcttatcg tttctgattg ccagtgtgca 1380
 agtttaacta actgttagat cttaactgtg gatgtaccca tatatttttt ttgcatcata 1440
 gttttattct tttttactta tgctgcattg aaattcctca gaaatgactt ataatgggca 1500
 aaagggtga atggctgagt ctggcctctt atcgtttcta gattgccagc gtgcaagttt 1560
 aactaaggtc ccgtttgggt tgagggatta aatatcagtg cctccatttt agtcccattt 1620
 agtccataaa ttgacaaacg gtgggactaa aacaaggact aaactgttct agtctctagt 1680
 ccctcaaggg atgactctaa ggggctaata cataaaaaat cacttttttg ccctccttca 1740
 tttcagttgc actaatggcg ggaggatggt aaggagtatt ttggtcttct tatgattcat 1800
 ttaatgtgtt ttgaatactt atagttttta gaaccaaaaca gggagggact aaatttttagt 1860
 cttctaacta aactttcgtc cctggactaa aggaacaaaa ccctaactgt tagatcttaa 1920
 ctgtggatgc acccatatat atttttgcat catagtttta gttctttttt acttacgcta 1980
 cttgcttagt ctgaacaggc attaataggg tgtttggttt gagggattag ttagttcacc 2040
 cactcattcc tcttttcttt gtttggttt ttgaatggag taggttggtc agtgcattat 2100
 cacatcattc ctgagactag tagttagtac tagtatgaag aatggggtca ttcaacaaa 2160
 ttttaaggaat tgactcatga tgcataacca catttagaat ggagtggctc ctcaaaccaa 2220
 accctataaa tgactggctg agttaattgt gctatctgtg tgtcatgaac ttgtgccggc 2280
 agcatagaca aacaaaatgc tttattttct cgggatacat ggtttcagca aatccactca 2340
 tgtttcagat tttaaactct cacaggttac tggacgaaga gatagagcca ggcctttgac 2400
 attcaggatg gaatcaagtg gtgcctgggg ttactcagga gcaaattctg gtaatcctcg 2460
 cattaactgca acttttgagg ccccttggtta tgcattaaac aagtaagttt cagaaaagta 2520
 cctggtcac tttgagtgtg gagtgattct tatttaccac ttaagcaatt cagtcgttat 2580
 acggttctga acttctgtta actggcttgt acagaataga gatagacaca aagttacca 2640
 tttttggcga ccagaaatgg gtcatatgga tttgctcttt caacattcca atggccccag 2700
 ggaagactcg ttctattgtc tgtagcgctc gaaacttttt ccagttcaca atgccaggaa 2760
 aagcatggtg gcaggtacat gtgtgttttag tgtttccttt acttaagctt tgttttctta 2820
 tttgttttgt caacataatc ttttaactgc taaaacgaac ttgttctcgc gtttttgtgg 2880
 gaaacaaggc aaaggctcct agtcctact gtaggcataat attattggca gagtttatta 2940
 cttggtcac tttgaattta tatgtgtaca gtcaaagtgt gatagcttct ttctcttggt 3000
 gtagcttggt cctcgatggt atgaacattg gacttcaaat ttggtctatg atggcgatat 3060
 gatcgttctt caaggccagg agaagatttt cctagctgca accaaggagt cttctacgga 3120
 tattaatcag cagtacacaa agatcacatt cagccccaca caagctgatc gatttgtttt 3180
 agcatgccgc acgtggctaa ggaaatttg caatagccag ccggagtggg ttggaaatcc 3240
 tacacaagaa gcattgcctt ccaccgtcct ttcaaagcgc gaggtaaaag ccactctggg 3300
 caccaaaaaa gtttcagtat aatatttgct tcagacataa aatatctgaa tatgacaacc 3360
 tttttgggtg tcaaagatct gttttgctta cattcttaat actcgatgca ttggtaagtt 3420
 attacagtta tcctttttac tcgatttttc cttttctgag cagaactatt atcacgtctt 3480
 cattgtttgt aacttggtt tctatgacac acaaattttt attttacatt atcagttgtc 3540
 atatgaacta atgtatttac agcaacctgc ttaagtgcct agtatcacia agggacaaat 3600
 tcaatgaaat atttggaag atagtagcgt cgaaccactc tcacagctag gcatttgaga 3660
 atagttactt aactgacgc gaagttcacc ttctaccgac tggatctgga aacagtatct 3720
 tgaagtagtt cacacgtaaa cttcatcag ctgtgtttct ggcttcaggt aactcatgta 3780

ttcttatgat tgactttgtg ttatgcagat gctagacaga tacgagcagc tctcgttgaa 3840
 atgctcgtct tgcaaaggag catataatgc tttccagaat ctgcagaagg tattcatggg 3900
 agcgacagta gtttgctgtg ctgccgctgg tattcctcca gatgttcagc tcaggctatt 3960
 gatcgggtgcg gctgcttttg tcagtgcgcg tatagcatac gcattccatg agctc 4015

<210> 3
 <211> 28
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: PRIMER

<400> 3
 tggggaactt gatcgcgac gccttcgg 28

<210> 4
 <211> 25
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: PRIMER

<400> 4
 tcgggcatgg cctgggggat cttgg 25

<210> 5
 <211> 20
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: PRIMER

<400> 5
 ggccacgcgt cgactagtac 20

<210> 6
 <211> 35
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: PRIMER

<400> 6
 gtgctcggct ccgctgctc cgccgcttcc cctgg 35

<210> 7
<211> 7
<212> PRT
<213> CONSENSUS SEQUENCE

<220>
<223> CONSENSUS SEQUENCE FOR THE REISKE-TYPE [2Fe-2S]
CLUSTER

<220>
<223> Xaa at positions 2, 4 and 6 can be any amino acid.

<400> 7
Cys Xaa His Xaa Cys Xaa His
1 5

<210> 8
<211> 7
<212> PRT
<213> CONSENSUS SEQUENCE

<220>
<223> CONSENSUS SEQUENCE FOR MONONUCLEAR NON-HEME
Fe-BINDING SITE

<220>
<223> Xaa at positions 2, 4 and 6 can be any amino acid.

<400> 8
Glu Xaa Asp Xaa His Xaa His
1 5